

Claims

1. A common rail injector for injecting fuel into a combustion chamber of an internal combustion engine, having an injector housing (7, 8, 31, 32, 39, 40), which has a fuel supply line (3, 4) which communicates with a central high-pressure fuel source (2) outside the injector housing and with a pressure chamber (15; 63) inside the injector housing, from which pressure chamber, as a function of the position of a control valve, especially a 3/2-way valve, fuel subjected to high pressure is injected, characterized in that the control valve, in particular the 3/2-way valve, includes a valve piston (34), movable back and forth in the injector housing between a position of repose and an injection position, which piston is coupled hydraulically with a piezoelectric actuator (43) that is subjected to the pressure from the high-pressure fuel source (2).
2. The common rail injector as defined by claim 1, characterized in that the injector housing (7, 8, 31, 32, 39, 40) includes a hydraulic coupling chamber (49), subjected to the pressure from the high-pressure fuel reservoir, by way of which coupling chamber the piezoelectric actuator (43) is coupled hydraulically with the valve piston (34).
3. The common rail injector as defined by claim 1 or 2, characterized in that a pressure face which is subjected constantly to high pressure from the fuel supply line (3) is embodied on the valve piston (34).

4. The common rail injector as defined by claim 2 or 3, characterized in that a first end of the valve piston (34) defines the hydraulic coupling chamber (49), and a second end of the valve piston (34) protrudes into a valve control chamber (30), which in the injection position of the valve piston (34) is in communication with a fuel return (38) and which in the position of repose of the valve piston (34) is subjected to the pressure from the high-pressure fuel reservoir (2).

5. The common rail injector as defined by claim 4, characterized in that a first sealing edge (36), which in the position of repose of the valve piston (34) interrupts a communication between the valve control chamber (30) and the fuel return (38), and a second sealing edge (37), which in the injection position of the valve piston (34) interrupts a communication between the high-pressure fuel reservoir (2) and the valve control chamber (30), are embodied on the valve piston (34).

6. The common rail injector as defined by claim 5, characterized in that a valve piston guide portion (35), whose diameter is somewhat less than the diameter of the first sealing edge (36), is embodied on the first end of the valve piston (34).

7. The common rail injector as defined by claim 6, characterized in that the diameter of the second sealing edge (37) is somewhat less than the diameter of the valve piston guide portion (35).

8. The common rail injector as defined by claim 6 or 7, characterized in that the valve piston (34) is embodied in one piece.
9. The common rail injector as defined by claim 7 or 8, characterized in that the valve piston (34) is embodied in multiple parts, in particular in two parts.
10. The common rail injector as defined by one of the foregoing claims, characterized in that the valve control chamber (30) communicates with a valve member control chamber (57).
11. The common rail injector as defined by one of claims 1 through 9, characterized in that the valve control chamber (30) is in communication with a pressure booster control chamber (23).